

# Shoulder Maintenance – Stone Placement

## For more information:

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## What was the challenge you set out to solve?

Routine maintenance of shoulders on our paved system has always presented issues. Past methods using end gate belt applicators on dump trucks resulted in a slow process that did not provide a uniform application of stone. It took time placing the end gate cross conveyor apparatuses and maintenance issues typically arose with the belt applicators. Clean up during the application of shoulder stone was also very timely. Jones County has been testing and researching a multitude of alternative equipment options, but never found a setup with more than marginal advantages.

## How did you develop and implement your solution?

We looked at the Iowa DOT's District 6 maintenance method of applying stone on their shoulders which is similar to the apparatus we constructed. Their device requires them to change out the end gate on their dump trucks and place flutes in the dump box. Our fabrication team put together some sketches and started producing a prototype that addressed a couple key components we felt to improve efficiencies. We constructed ours with the use of the existing dump box tailgate that's on all of our trucks so it would be universal and no dump box flutes would be required. The hopper is designed with sloped sides, Teflon liner, and a vibrator to ensure material flows down the chute and onto the shoulder. Ours also has a fully adjustable striker plate to accommodate the elevation difference from the hard-surfaced road to the shoulder, this is due to our narrower roadway widths and provides us with the ability to run one wheel on the paved surface.

## What did it take to make this solution a reality?

Our fabricators made all their own sketches and produced these units entirely in-house using raw materials purchased locally (mainly steel). Our fabrication shop is equipped with the necessary tools including a mill/lathe to produce these units. Currently we have two units with another scheduled for production this spring/summer. A total of 35 hours is required to produce one unit using primarily two fabricators.

## What was the cost of implementation?

Cost One Unit: material costs \$3,500, labor cost \$1,322  
Total Estimated Cost for One Shouldering Unit = \$4,822

## What was the impact and results of your efforts?

Shouldering maintenance is a high priority and is an annual operation here at Jones County. This will be the first season we can quantify our efforts, typically costs are from \$150k - \$200k annually for approximately 50 lane miles. These units will result in less material wasted, reduced labor and equipment



costs, and produce more lane miles covered. Shoulder edge drop-off is a major safety issue that our Secondary Road Department continually mitigates with our shoulder replacement program. This new equipment adds another component to our toolbox that will address this important issue for the traveling public.

Video Link:

<https://www.dropbox.com/sh/qb33vhaf51nntyd/AAA-1yKXEfPQlr0hllc0FtiZa?dl=0>

